Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte VIRGIL A. ALBAUGH
and ROBERT J. URQUHART

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Appeal No. 95-3380
Application 08/109,572[1]
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ON BRIEF
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Before THOMAS, JERRY SMITH and CARMICHAEL, Administrative Patent Judges.

THOMAS, Administrative Patent Judge.

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[1] Application for patent filed August 19, 1993. According to the appellants, this application is a continuation of Application 07/624,163, filed December 6, 1990.

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DECISION ON APPEAL

Appellants have appealed to the Board from the examiner's

final rejection of claims 33 to 46, which are all the claims that

remain in the application.

Representative claim 33 is reproduced below:

33. A method of displaying objects on a computer graphics
system having a display with at least one block of pixels, said
block including at least two pixels therein, comprising the steps
of:

displaying, by the pixels within said block, at least a
portion of a first object;

storing a maximum depth value for the block of pixels
displaying the first object;

computing a single depth value for a second object to be
displayed by at least one pixel in said block; and

determining, in one comparison only between said maximum
depth value and said single depth value, whether all the pixels
in the block will continue to display the first object.

The following reference is relied on by the examiner:

Heckel   4,697,178   Sep. 29, 1987

Claims 33 to 46 stand rejected under 35 U.S.C. § 103 as

being obvious over Heckel alone.

Rather than repeat the positions of the appellants and the

examiner, reference is made to the Brief and the Answer for the

respective details thereof.

OPINION

Essentially for the reasons set forth by appellants in the Brief, we reverse the outstanding rejection under 35 U.S.C. § 103 of claims 33 to 46 on appeal.

In the statement of the rejection at page 3 of the Answer the examiner recognizes that the depth value of each pixel in the line segment of Heckel is compared with a depth value stored in a depth buffer to determine whether or not the pixel is to be displayed on the screen. The examiner's position recognizes that Heckel does not specifically disclose comparing the maximum depth value of all the pixels within a block to determine the visibility of the entire block in a single comparison.

The examiner's reasoning continues by apparently relying upon the teaching at col. 10, lines 31 to 39 that it would have been obvious to the artisan within Heckel's teachings and suggestions at this location to have performed the operation in the manner that the examiner recognizes was not specifically taught in Heckel. Although we appreciate the examiner's reasoning here at this portion of the Answer as well as the example and recognition at pages 5 through 7 of the Answer that

there is an apparent logical converse between the express

teachings of Heckel and those associated with the disclosed and

claimed operation, the examiner's reasoning appears to be

incomplete and misplaced.

Aside from the examiner's own reasoning and an attempt to

rely upon a teaching at the above noted location in Heckel, the

examiner has not come to grips with the argument made by

appellants between pages 8 and 10 of the Brief that Heckel

expressly teaches comparing the depth information for each pixel

within each identifiable line segment to be displayed with the

depth information for the corresponding pixel in a depth buffer.

Although we would not go so far as to agree with appellants'

assertion that Heckel teaches away from the claimed invention, it

is clear that Heckel does operate solely upon the above stated

principle that a pixel-by-pixel comparison occurs of each pixel

in a line segment of a scene to be displayed with each

corresponding pixel within the depth information stored in a

depth buffer of information already displayed. This is

specifically taught in the summary of the invention beginning at

col. 3, line 59 in at least three locations through col. 6, line

12 and again in the body of Heckel's disclosure beginning at col.

10 through the middle of col. 11 describing the flow chart operation of Fig. 6.

The "one comparison only" operation in independent method claim 33 and its corresponding apparatus claim 40 distinguishes over the individual pixel-by-pixel comparison upon which Heckel is based. The claimed invention not only requires the storage of a maximum depth value for a block of pixels actually being displayed as a first object, but also the computation of a single depth value (disclosed as a minimum depth value) for a second object to be displayed, thus permitting the subsequent single step comparison at the end of independent claims 33 and 40 on appeal.

Although we agree with the examiner's basic approach to the rejection that Heckel <u>may have been</u> modified or <u>could have been</u> modified so that the artisan would have arrived at the presently claimed invention, we do not agree that the present claimed invention <u>would have been</u> obvious to the artisan within 35 U.S.C. § 103 on the basis of Heckel and the examiner's reasoning alone. Clearly, something more, such as additional prior art, would have been necessary to convince us that the presently claimed subject matter would have been obvious to the artisan.

Inasmuch as we do not agree with the examiner's positions and rejection as they relate to independent claim 33 and 40 on appeal, we also must reverse the rejection of dependent claims 34 through 39 and 41 through 46. Therefore, the decision of the examiner rejecting claims 33 to 46 under 35 U.S.C. § 103 is reversed.

<u>REVERSED</u>

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          JAMES D. THOMAS                  )
          Administrative Patent Judge      )
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                                          ) BOARD OF PATENT
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JERRY SMITH   )
Administrative Patent Judge   )   APPEALS AND
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